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U.S. Congress. House.

Making boundary lines between Texas, and New Mexico and Oklahoma.

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59TH CONGRESS, 1st Session. } HOUSE OF REPRESENTATIVES. { REPORT No. 1186.

MARKING BOUNDARY LINES BETWEEN TEXAS AND NEW MEXICO AND OKLAHOMA.

FEBRUARY 13, 1906.—Committed to the Committee of the Whole House on the state of the Union and ordered to be printed.

U.S. Congress

Mr. BIRDSALL, from the Committee on the Judiciary, submitted the following

REPORT.

[To accompany H. R. 443.]

The Committee on the Judiciary, to whom was referred the bill (H. R. 443) providing for the marking of the boundary lines between the State of Texas and the Territories of New Mexico and Oklahoma, submit the following report:

In the year 1835 the Republic of Texas declared its independence from Mexico. By a joint resolution passed March 1, 1845, Congress consented that "The territory properly included within and rightfully belonging to the Republic of Texas" might be created into a State to be admitted into the Union, one of the conditions of such consent being that the new State be formed subject to the adjustment by the United States of all questions of boundary that might arise with other governments. (5 Stat., 797.)

The conditions prescribed were accepted by Texas (1 Sayle's Early Laws of Texas, art. 1531), and by the joint resolution of Congress approved December 29, 1845, Texas was admitted into the Union on an equal footing in all respects with the original States (9 Stat., 108). Then came the act of Congress of September 9, 1850 (C. 49, 9 Stat., 446), entitled "An act proposing to the State of Texas the establishment of her northern and western boundaries and the relinquishment of all claim to territory exterior to said boundaries and to establish a Territory for New Mexico."

The act referred to defined the northern boundary of Texas in the following language:

> The State of Texas will agree that her boundary on the north shall commence at the point at which the meridian of one hundred degrees west from Greenwich is intersected by the parallel of thirty-six degrees thirty minutes north latitude, and shall run from said point due west to the meridian of one hundred and three degrees west from Greenwich, thence her boundary shall run due south to the thirty-second degree of north latitude, thence on the said parallel of thirty-two degrees of north latitude to the Rio Bravo del Norte, and thence with the channel of said river to the Gulf of Mexico.

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By the same act the State of Texas, in consideration of $10,000,000, was to cede to the United States all her claim to territory exterior of the limits and boundaries which she agreed to establish by the foregoing article.

Texas accepted the act November 25, 1850. (2 Sayle's Early Laws of Texas, art. 2127.)

June 5, 1858, Congress passed an act to authorize the President of the United States, in conjunction with the State of Texas, to run and mark the boundary lines between the United States and the State of Texas. The act provided for the appointment of a suitable person or persons on the part of the United States to act with similar persons on the part of Texas in running and marking the lines. The act itself describes the boundaries to be run by such persons as follows:

> Beginning at a point where the one hundredth degree of longitude west from Greenwich crosses the Red River and running thence north to the point where said one hundredth degree of longitude intersects the parallel of thirty-six degrees thirty minutes north latitude, and thence west with the said parallel of thirty-six degrees and thirty minutes north latitude to the point where it intersects the one hundred and third degree of longitude west from Greenwich, and thence south with said one hundred and third degree of longitude to the thirty-second parallel of north latitude, and thence west with the said thirty-second degree of north latitude to the Rio Grande. (11 Stat., 310.)

The survey thus provided for was in part executed in the years 1859 and 1860. John H. Clark was appointed commissioner by the United States under the act of June 5, 1858, and, in conjunction with one William R. Scurry, commissioner on behalf of the State of Texas, commenced a survey of the northwestern boundary in January, 1859.

The commissioner on behalf of the State of Texas, on account of a quarrel, abandoned the work in May, 1859. The line was surveyed and marked by mounds from the vicinity of El Paso eastward on the thirty-second parallel to the one hundred and third meridian, and north on the one hundred and third meridian for about 20 or 24 miles. The longitude of the monument at the intersection of the thirty-second parallel and the one hundred and third meridian rests upon the station Frontero of the Mexican boundary survey, a well-established point, carried eastward from the Rio Grande 211 miles by chaining and proper triangulation.

The northwest corner of Texas was established in September, 1859, by Clark, who then surveyed and monumented the one hundred and third meridian from the northwest corner of Texas southward for 156 miles, leaving a gap of 130 miles between the south end of the line thus surveyed and the north end of the line surveyed by him in May the same year. It would appear that Clark afterwards projected his survey from the north farther south about 70 miles, but it was not monumented, so that in fact about 116 miles remain unmarked and about 60 miles have never been surveyed at all.

In the year 1860 he returned to the work and began his survey on the one hundredth meridian where it crosses the Canadian River. Indian contract surveyors named Jones and Brown surveyed most of the boundary on the one hundredth meridian in 1859.

Clark accepted the survey previously made by Jones and Brown of the one hundreth meridian from the main Red River northward to a point 19 miles north of the Canadian, continued that line northward to a point of intersection with the parallel of 36° 30′, the northeast corner of the Texas Panhandle, and surveyed and marked the northern

boundary of the Panhandle. This ended his efforts toward completing the survey provided for by the act of June 5, 1858.

The result of his work remained unreported to Congress until 1882, when it was called for by the Senate of the Forty-seventh Congress, and a report was made, as appears by Senate Document No. 70, first session Forty-seventh Congress. Up to the date of this report no part of said boundary had ever been officially agreed upon or accepted by Texas or the United States, as contemplated in the act of June 5, 1858, authorizing the survey. Since that date part at least of the Clark survey has been adopted by the United States. In the act approved March 3, 1891, known as the sundry civil act, it is enacted—

> That the boundary line between said public land strip and Texas and between Texas and New Mexico, established under the act of June 5, 1858, is hereby confirmed. (26 Stat., p. 971.)

By this act the Clark survey as to the one hundred and third meridian is confirmed. Clark erected 26 monuments on this one hundred and third meridian, 3 of which are on the south end and 23 on the north end. In his report (see Doc. No. 70, 47th Cong.) he describes them as chiefly earth or stone monuments, sometimes erected around a stake. Subsequent surveys made by contract surveyors of the United States and by surveyors for the State of Texas have demonstrated that few, probably not more than 3 or 4, of the monuments located by Clark upon the one hundred and third meridian can now be found and identified. The Department of the Interior caused to be published in 1902 Bulletin of the United States Geological Survey No. 194, series F, Geography 30, on the Northwestern Boundary of Texas, by Marcus Baker, in which the several surveys of the boundary line are reviewed, and so far as relates to the boundary line on the one hundred and third meridian the following conclusions are arrived at by Mr. Baker:

(1) The western boundary of the Panhandle of Texas is fixed by law on the one hundred and third meridian.

(2) Of the 310 miles composing the line, 24 miles at the south end and 156 miles at the north end were surveyed and marked with monuments by Clark in 1859.

(3) Clark's survey has been confirmed by the United States.

(6) Of the monuments south of the Canadian we have no information. It seems probable that many or most of them are lost.

(7) The boundary along the 131 miles not surveyed or marked by Clark is on the one hundred and third meridian as it shall hereafter be surveyed and confirmed.

(8) As to the 24 miles at the south end we have no information to show that it is not on the true one hundred and third meridian.

(9) As to that part of the Clark line running south from the Canadian River about 80 miles, we have no information as to its longitude except the monuments on the banks of the Canadian.

With relation to the boundary on the one hundredth meridian we glean from the report of Marcus Baker, No. 194, the following discussion:

The east boundary of the Panhandle of Texas is established by law to be that part of the one hundredth meridian of west longitude from Greenwich included between Red River and the parallel of 36° 30′. In 1850 Texas agreed that the northeast corner of the Panhandle

should be at the intersection of the parallel of 36° 30′ and the one hundredth meridian west of Greenwich. In 1859 the line was surveyed and marked upon the ground. A. H. Jones and H. M. C. Brown were contract surveyors employed by the Indian Office prior to the civil war to survey the boundary of certain Indian lands.

In November, 1857, Daniel G. Major was appointed astronomer for the Indian boundary surveys. In the spring of 1859 Jones and Brown started from a monument on the north branch of Red River and which, according to observations made by Major in January, February, and March, 1859, is on the one hundredth meridian of west longitude from Greenwich. From this point they surveyed north, setting monuments at every mile. The entire distance from Red River to the northeast corner of the Panhandle is 133 miles. Starting at the south end, Jones and Brown surveyed and marked about 110 miles, their terminating monument being set about 19 miles north of the Canadian River. The remaining 23 miles were surveyed by Clark in June of the following year.

Clark commenced his survey at the point where the line of Jones and Brown crossed the Canadian River, followed their line northward 19 miles to its end, and then prolonged it 23 miles from there to its intersection with the parallel of 36° 30′, the northeast corner of the Panhandle, which he marked by a monument. As a check on the longitude of the northeast corner it appeared by Clark's report that he prolonged the Jones and Brown line 30 miles farther north to the south boundary of Kansas, where he intersected that line about 1,700 feet east of the one hundredth meridian as determined by himself when employed by a surveying party in 1857.

Since the original surveys of this line all the lands adjoining it on the east have been surveyed and subdivided.

In June, 1892, Professor Pritchett was employed by the State of Texas to determine as accurately as possible the longitude of the monument on the north bank of the Red River set in 1859 to mark the one hundredth meridian. This he did, and found its longitude to be 100° 0′ 45″.71 west of Greenwich, or 3,797.3 feet west of the one hundredth meridian. Subsequent steps have been taken by Congress to determine definitely the true location of the one hundredth meridian, to which further attention will be called.

The conclusions drawn by Marcus Baker in Bulletin No. 194 regarding this portion of the boundary are thus set forth:

(1) The northeast corner of the Panhandle of Texas is fixed by law at the intersection of the parallel of 36° 30′ and the one hundredth meridian west of Greenwich.

(2) This point was located by Clark in 1860, and a monument was erected to mark it.

(3) Congress confirmed a part of Clark's survey in 1891, such confirmation including his monument at the northeast corner of Texas.

(4) Subsequent surveys, though inconclusive, make it probable that the said Clark monument was established a little to the west—say, 1,000 feet, more or less—of the one hundredth meridian.

(5) The monument on the north bank of the Red River, set by Major in 1859 to mark the eastern boundary of Texas at that point, is 3,797 feet west of the one hundredth meridian.

(6) By subsequent surveys of public lands by the Land Department said monument on the Red River has been accepted as marking the Texas boundary line at that point.

(7) Those boundary monuments which are northward from this one and which were set by Jones and Brown in 1859 have been accepted in the public survey as boundary monuments of Texas.

(10) Texas has never accepted or disputed these monuments as far as known.

The foregoing appears to have been the condition of this boundary question up to January, 1901, when Congress, by an act approved January 15, 1901 (31 Stat. L., 731), provided for the determination of the true location of the one hundredth degree of west longitude as follows:

> That the Secretary of the Interior be, and he is hereby, authorized and directed to cause to be established and fixed the intersection of the true one hundredth meridian with Red River by the most accurate and scientific methods, and at said intersection cause a suitable monument to be erected on the ground.

In pursuance of this act, Mr. Arthur D. Kidder, examiner of surveys, was detailed to make the necessary observations and calculations and to establish the point of intersection of the true one hundredth meridian with the Red River.

Mr. Kidder performed the work in the months of February, March, and April, 1902, and the result of his labor was reported to the second session of the Fifty-seventh Congress by the Secretary of the Interior, and is found in House Document No. 375.

Mr. Kidder determined that the correct longitude of the old initial monument on the Red River was 100° 0′ 24″ and that the true one hundredth meridian was 3,699.7 feet east of the initial monument. He set a monument at the point of true determination.

The act in question was passed in Congress in consequence of a decision of the Supreme Court of the United States in the Greer County case reported in 162 U. S., 1–89, 90, and the necessity and purposes of its enactment are recited in the preamble as follows:

> Whereas there was a controversy of long standing between the United States and the State of Texas as to the ownership of the territory formerly known as Greer County, Texas, which was finally determined in favor of the United States by the decree of the Supreme Court of the United States March sixteenth, eighteen hundred and ninety-six, in a suit in equity brought in the United States against the State of Texas in that court; and
>
> Whereas the treaty between the United States and Spain, which was ratified February nineteenth, eighteen hundred and twenty-one, fixed the boundary between the United States and Spain, and this became the boundary between the United States and Spain, and this became the boundary between the United States and the Republic of Texas and the State of Texas successively; and
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> Whereas it was provided by said treaty that the boundary line west of the Mississippi should begin on the Gulf of Mexico at the mouth of the Sabine River in the sea, continuing north along the western bank of that river to the thirty-second degree of latitude, thence by a line due north to the degree of latitude where it strikes the Rio Roxo of Natchitoches or Red River, then following the course of the Rio Roxo westward to the degree of longitude one hundred west from London and twenty-three from Washington, then crossing the said Red River and running thence by a line due north to the river Arkansas and so forth; and
>
> Whereas the Supreme Court of the United States in said cause adjudged that the words in said treaty "then following the course of the Rio Roxo westward to the degree of longitude one hundred west from London and twenty-three from Washington, then crossing the said river" referred to the true one hundredth meridian astronomically located; and
>
> Whereas the true intersection of said one hundredth meridian with Red River, or what, prior to said decision was known sometimes as the South Fork of Red River or Prairie Dog Town Fork, has never been fixed by the United States and the State of Texas, acting together and in the manner provided by said treaty, nor was said true intersection fixed by the decree in said cause: Therefore,
>
> *Be it enacted, etc.*, That the Secretary of the Interior be, and he is hereby, authorized and directed to cause to be established and fixed the intersection of the true one hundredth meridian with Red River, or what prior to said decision was known

sometimes as the South Fork of the Red River or Prairie Dog Town Fork, by the most accurate and scientific methods, and at said intersection cause a suitable monument to be erected on the ground.

The general report of Arthur D. Kidder, special examiner of surveys on the boundaries of Texas, Oklahoma, and New Mexico, made to the Secretary of the Interior, sets forth the following facts, throwing light upon the situation to a considerable extent:

GENERAL REPORT.

It is the intention in this portion of my report to show as far as possible the existing conditions along the boundary lines between the State of Texas and the Territories of New Mexico and Oklahoma considered in their entirety from the initial monument on the old one-hundredth meridian on the Red River, thence on the locus of the surveys as executed on the one-hundredth meridian, the parallel of 36° 30′ north latitude, the one hundred and third meridian, and the thirty-second parallel to the bed of the Rio Grande as occupied by the river in 1858. The conditions stated in the goregoing field notes are conditions of fact rather than theory, and I shall endeavor to explain them more comprehensively herewith than is possible in the elaborate observations, calculations, and field notes upon which my conclusions are based, and I shall endeavor to show as far as possible the significance with which all existing monuments are held, not only by the United States, but also by Texas and all settlers whose land titles depend upon them.

For a history of the Clark surveys reference is had in Senate Executive Document No. 70, Forty-seventh Congress, first session; for an exhaustive history and study of the records in Washington pertaining to the Clark and subsequent surveys of the boundary lines in question reference is had in House Document No. 635, Fifty-seventh Congress, first session; for the observations, calculations, and field notes of the establishment of the point of intersection of the true one hundredth meridian with the Red River reference is had in House Document No. 375, Fifty-seventh Congress, second session.

The work described in the foregoing field notes was executed under instructions from the honorable Commissioner of the General Land Office dated March 12, 1903, said instructions anticipating the following field work:

(*a*) The execution of the necessary astronomical observations and calculations and the projection of such true lines as would enable the establishment by the most approved methods and the marking upon the ground the following astronomical points, viz:

(1) The point of intersection of the one hundredth meridian west from Greenwich with the parallel of 36° 30′ north latitude.

(2) The point of intersection of the one hundred and third meridian west from Greenwich with the parallel of 36° 30′ north latitude.

(3) The point of intersection of the one hundred and third meridian west from Greenwich with the parallel of 32° north latitude.

(4) The point of intersection of the thirty-second parallel north latitude with the Rio Grande.

(*b*) In connection with the above the execution of the necessary retracements, in order to ascertain the relative location of existing old monuments to the true astronomical lines upon which they were designated to be established, noting to some extent the absence of monuments now lost or obliterated.

(*c*) The execution of a careful retracement of the one hundredth meridian, as closed upon in the survey of public lands in Oklahoma, from the Red River north to the parallel of 36° 30′ north latitude.

(*a*, *b*, *c*) The consummation of the work under the above instructions, including, therefor, the establishment of the above standard points, the ascertainment of the condition of the old boundary lines as now existing, the amount of error in the original surveys, and the magnitude of the changes which a true determination will involve, all as a basis for further recommendation to the Department for the resurvey or remarking of the boundaries in question.

I have the honor to report as follows:

(*a*) The reference point chosen for the longitude determinations was the point used for the Red River observatory in my determination in 1902 of the point of intersection of the true one hundredth meridian with the Red River, pursuant to the provisions of the act of Congress approved January 15, 1901. (U. S. Stat. L., 31, p. 731). The longitude of the Red River observatory was determined by telegraphic exchange of time signals from the observatory of the Washington University, at St. Louis, Mo. The check in the position of the Red River observatory pier is found in the comparison of the fixation of the point of intersection of the true one hundredth meridian with the Red River as thus determined and fixed, with a similar fixation in 1892 by Prof. H. S. Pritchett. Professor Pritchett observed at Childress, Tex., and also determined his position by telegraphic exchange of time signals from the Washington University observatory. From the point thus determined at Childress Professor Pritchett established a triangular system by which the longitude was transferred to the Red River, and the true one hundredth meridian fixed, but not marked, at a point 3,797.3 feet east of the initial monument of the old one hundredth meridian. (See H. Doc. No. 635, 57th Cong., 1st sess., pp. 31–35 incl. This report states that Professor Pritchett was employed by the State of Texas.)

In 1902 the true one-hundredth meridian was fixed and marked at a point 3,699.7 feet east of the initial monument of the old one-hundredth meridian. (See H. Doc. No. 375, 57th Cong., 2d sess., which pertains entirely to the determination in 1902.) The difference in the two fixations is thus 97.6 feet, corresponding to 0° 0′ 1.17″ in longitude. Considering that the transfers of the longitude from the respective observatories were both correct and the errors in transfer were probably not to exceed one-tenth of the difference in the fixation, the resulting difference is that due to the observations for time and exchange of time signals. The latter difference corresponds to a little less than 0.08 of a second of time. The difference is a very reasonable one, and it is presumed that all interested parties will readily acquiesce in the determination of the true one-hundredth meridian as authorized by Congress.

The observatory at St. Louis, having been removed, was unavailable for the execution of the longitude determinations in 1903, and

the determinations in 1903 were therefore made by reference to the Red River observatory pier, and the new determinations therefore refer by two steps to the old Washington University observatory, for which the observers for both steps were the same and the methods practically the same, with a slight advantage in thoroughness and a larger number of stars observed in the determinations in 1903. The telegraphic exchange of time signals for the work under the present instructions was very much facilitated by the availability of the telegraphic circuits. The circuits were the shortest possible ones and worked perfectly, aided also, as they were, by the new General Land Office telegraph instruments.

The most approved methods were pursued in the longitude determinations and a fair check upon the results accomplished is found in the position of the longitude pier at Higgins, Tex., as determined astronomically and as determined by the retracement of the old one hundredth meridian by transit line. This difference corresponds to less than 0.02 of a second of time, being 0.″22 of longitude, measuring 18 feet, and is certainly well within a reasonable limit of error.

The observations for latitude were made in the immediate vicinity of the point whose positions were to be fixed, the approved Talcott method was pursued and only standard stars were used, the positions being taken from the American Ephemeris or Berliner Jahrbuch for 1903. The zenith telescope performed nicely and the mean result of all observations by Mr. MacConnel and myself was used in the final fixations. It is not desirable to expand here upon what is already described in detail in the field notes of the astronomical work, but in concluding upon the precision attained I only wish to state that every effort was made to arrive at the most accurate and reliable results.

The following astronomical points were fixed: (1) 36° 30′ north latitude–100° west longitude; (2) 36° 30′ north latitude–103° west longitude; (3) 32° north latitude–103° west longitude; (4) 32° north latitude near its intersection with the Rio Grande.

Each point was marked in a thorough and workmanlike manner by a monument built with concrete, cubic contents a little over 1 cubic yard and weighing therefore about 3,500 pounds each. The portion above ground is enveloped in a shell of heavy galvanized iron which carries the letters appropriate to the point.

The above therefore includes all that was outlined in what I have termed part (*a*) of the instructions.

(*b*, *c*) THE ONE HUNDREDTH MERIDIAN—HISTORICAL SKETCH.

(See Field Notes of Surveys of Indian Reservations in Indian Territory, vol. 2, p. 211.)

The Jones and Brown survey.—Under contract with the Commissioner of Indian Affairs dated October 13, 1857, A. H. Jones and H. M. C. Brown, United States surveyors, surveyed, in 1859, the the west boundary of the Choctaw and Chickasaw countries. This boundary line was designated as the one hundredth meridian of longitude west from Greenwich. The longitude of the initial point on the Red River was determined by moon culminations and the one hundredth meridian fixed by the astronomer, Daniel G. Major.

The line was surveyed 90 miles to the north bank of the Canadian and continued thence as the west boundary of the Creek or Seminole country, a distance of 19 miles 56.54 chains, to an intersection with the south boundary of the Cherokee country, a distance, therefore, of 109 miles 56.54 chains from the Red River.

Monuments were established by Jones and Brown at interavls of 1 mile; they each consisted of a wooden post witnessed by pits and a mound of earth; topographical points of interest were noted, and bearing trees were marked whenever available. (See S. Ex. Doc. No. 70, 47th Cong., 1st sess.)

The Clark survey.—Under the provisions of the act approved June 5, 1858 (U. S. Stat. L., 11, p. 310), John H. Clark was appointed United States commissioner for the survey of the one hundredth meridian, as follows: "Beginning at the point where the one hundredth degree of longitude west from Greenwich crosses Red River, and running thence north to the point where said one hundredth degree of longitude intersects the parallel of thirty-six degress thirty minutes, north latitude." This survey Clark executed in 1860, his operations being best described in his own words. (See p. 300 of above Doc. No. 70.)

That part of the one hundredth meridian lying between the main branch of Red River and the southern boundary of the Cherokee country had been determined, run, and marked by Messrs. Jones and Brown in 1859 under the direction of the Indian Bureau, as constituting the boundary line between Texas and a part of the Indian Territory. So much of the boundary line as was then established Hon. Jacob Thompson, then Secretary of the Interior, directed me adopt, and in pursuance of this instruction I simply retraced the meridian up to where the work of Messrs. Jones and Brown ended. Thence I prolonged it up to its intersection with the parallel 36° 30′.

The following is Clark's description of the monuments on the one hundredth meridian:

1. On the north bank of Pond Creek. It is built of firm soil and the stake in the center is a large barked cottonwood tree.

2. Is on a trail made by Major Sedgwick and his command in 1860, very near the north bank of Middle River. The soil is just here somewhat sandy, but not light enough to drift.

3. On Commission Creek, built of stone.

Southward from this last monument, beginning at the southern boundary line of the Cherokee country, mounds of earth are thrown up for every mile to the main branch of Red River. In retracing this part of the boundary line I found that some of these monuments, falling in hollows, had been washed away and many destroyed by buffalo. (See vol. 82, Field Notes, Indian Territory.)

The Du Bois reestablishment.—Under contract dated June 6, 1873, Mr. C. L. Du Bois, United States surveyor, reestablished, in 1875, the one hundredth meridian from the Red River north, a distance of 31 miles.

Mr. Du Bois developed the fact that the line surveyed by Messrs. Jones and Brown had a large bearing to the east, averaging in the 31 miles about N. 0° 40′ E. The identification of the Jones and Brown line by Mr. Du Bois was positive, however, and his reestablishment consisted in the rebuilding with stone of the mile corners in the exact location as established by Messrs. Jones and Brown. (See vols. 71, 73, 74, 75, 76, 81, 82, and 101, Field Notes, and vol. 14, Plats, Indian Territory.)

The Du Bois closings.—Under the same contract as above Mr. Du Bois in the same year subdivided the public lands in Tps. 1 to 6 N.,

inclusive, R. 27 W., Indian meridian, Oklahoma, and in the execution of that survey closed his lines upon the one hundredth meridian as reestablished by himself, setting closing corners thereon. (See vol. 101 and 105, Field Notes, and vol. 14, Plats, Indian Territory.)

The Morrill closings.—Under contract dated June 26, 1873, O. T. Morrill, United States surveyor, surveyed the public lands in Tps. 7 to 12 N., inclusive, R. 27 W., Indian meridian, Oklahoma, and in the execution of this survey closed his lines upon the one hundredth meridian as surveyed by Jones and Brown, identified by himself but not reestablished. Mr. Morrill erected closing corners where his lines intersected the one hundredth meridian as surveyed by Jones and Brown. (See vol. 89, Field Notes, Indian Territory.)

The Hackbusch reestablishment.—Under contract dated June 23, 1873, H. C. F. Hackbusch, United States surveyor, reestablished, in 1875, the one hundredth meridian from the sixty-seventh to the ninetieth milepost.

Mr. Hackbusch states: "The original corners on the one hundredth meridian, the boundary line between Texas and the Indian Territory, owing principally to the sandy soil, are so far obliterated and indistinct that I find it necessary to resurvey and reestablish the corners of said line as far as my contract extends, so as to enable me to close the line of my survey thereon." Mr. Hackbusch states that he identified the witness corner 9 chains south of the true point for the eighty-ninth mile corner and that he identified the sixty-seventh mile corner. It is not clear from his notes how many or what other intermediate mile corners were identified, but it is evident that a number of others were identified. He states that the reestablishment and resurvey were run "after adjusting my solar compass so as to retrace the original line."

Mr. Hackbusch made his reestablishment at every mile point by setting a post properly marked and witnessed by depositing a charred stake, digging pits, and erecting a mound of earth. Three cottonwood bearing trees were also noted and marked by him to witness the point 80 miles and 60 chains on the Washita River. (See vol. 89, Field Notes, and vol. 14 Plats, Indian Territory.)

The Hackbusch closings.—Under the same contract as above, Mr. Hackbusch in the same year subdivided the public lands in Tps. 13 to 15 N., inclusive, and fraction T. 16 N., R. 26 W., Indian meridian, Oklahoma, and in the execution of that survey closed his lines upon the one hundredth meridian as reestablished by himself, setting closing corners thereon. (See vol. 57, Field Notes, Indian Territory.)

The Darling resurvey.—Under contract dated September 7, 1872, Ehud N. Darling, United States surveyor, resurveyed in 1875 the one hundredth meridian from the ninetieth mile corner on the north bank of the Canadian north to the south boundary of Kansas, resurveying the line as the west boundary of the Cherokee country.

Mr. Darling identified the following partly obliterated corners: (1) The ninetieth mile corner, his initial point; (2) the second mile corner; (3) the third mile corner, and (4) the fourth mile corner, which he describes thus:

> At this corner found part of a post, the most of it had been burned, no signs of a mound. This was the last sign of a corner found on the line.

Mr. Darling set a stone, suitably marked, at every mile point of his resurvey of the one hundredth meridian. (See vol. 59, 60, and 61, Field Notes, and vol. 14 Plats, Indian Territory.)

The Darling closings.—Under the same contract as above, Mr. Darling, in the same year, subdivided the public lands in fractional T. 16 N. and Tps. 17 to 23 N., inclusive, R. 26 W., Indian meridian, Oklahoma, and in the execution of that survey closed his lines upon the one hundredth meridian as resurveyed by himself, setting closing corners thereon.

THE OLD ONE HUNDREDTH MERIDIAN TO-DAY.

(See foregoing field notes.)

The 1903 retracement.—Under instructions dated March 12, 1903, I retraced the above-described one hundredth meridian from the Red River to Darling's forty-fourth mile corner, a distance of 134 miles from the Red River, or to a point a little over 1¼ mile north of the parallel 36° 30′. My operations and results obtained are fully described in the foregoing field notes of my retracement, and at the conclusion of said notes I have arranged a table showing the distance from every identified mile corner on the old one hundredth meridian to the true one hundredth meridian, as determined astronomically in 1902 and 1903.

My field notes show that the present identification of the old line from the Red River to the thirty-first mile corner as reestablished in 1875 by Mr. Du Bois is positive and conclusive.

Starting at the Red River the old meander corner was found to have been washed away, as the river has cut about a chain north since 1875.

The initial monument was identified and stands 56.06 chains west of the true one hundredth meridian, as marked by the monument established in 1902.

Northward from the initial monument, as far as the line was reestablished by Mr. Du Bois, every mile corner excepting four was identified, and the character of this reestablishment by Mr. Du Bois makes this portion of the one hundredth meridian unquestionably the best-marked portion of the entire Texas boundary lines from the Red River to the Rio Grande as they exist to-day. Of the four mile corners which I was unable to find, three were in very sandy soil and may be buried in the sand, as was the condition in several instances in this retracement, where we succeeded in finding the old corners by digging. This process, however, adds greatly to the time required in making the retracement, and is not always fruitful of results.

As developed by Mr. Du Bois, I find also that the old line bears rapidly to the east, quite uniformily to the twenty-fourth mile corner—the easting to this point amounting to 22.43 chains; from there to the thirty-first mile corner the easting is less rapid, but amounts to a total easting from the initial monument on the Red River of 27.11 chains. This easing reduces the distance to the true one hundredth meridian, so that, allowing for convergency of meridians, the thirty-

first mile corner stands 28.68 chains west of the true one hundredth meridian, or only about half so much in error as the initial monument.

From the thirty-first mile corner to the sixty-seventh mile point I was retracing the original line as surveyed by Jones and Brown in 1857, and to the forty-third mile corner I found and identified all excepting three mile corners. Throughout this distance the soil is mostly firm, and distinct evidence of the old pits and mounds of earth still exists except in a few sandy places where only the charred stake remains to mark the original point.

The easting from the thirty-first to the forty-third mile corners averages about the same as from the twenty-fourth to the thirty-first mile corners, and the forty-third mile corner I find to be 20.62 chains west of the true one hundredth meridian.

From the forty-third mile corner to the sixty-seventh mile point none of the Jones and Brown mile corners could be found, owing, I believe, to the loose sandy soil which in many places is loose enough to drift. However, on the fifty-third mile I noted a large red sandstone bowlder which I conclude must be the same one as referred to at this point by Jones and Brown as being "near the meridian." I did find in this distance eleven of the stone closing corners set by O. T. Morrill heretofore described; these closing corners agree about with the sandstone bowlder in alignment and show that from the forty-third mile corner to the closing corner of the third standard parallel on the sixty-eighth mile the old line has an additional easting of 8.28 chains.

Between the sixty-seventh and ninetieth mile points I was retracing the line as reestablished, resurveyed, and closed upon by Hackbusch in 1875, and I certainly concur in the views expressed by Mr. Hackbusch in the remarks with which he has prefaced his resurvey: "Owing principally to the sandy soil the original corners are so far obliterated and indistinct that I find it necessary to resurvey and reestablish the line."

I was unable to find any mile corners or closing corners established by Hackbusch until the seventy-seventh mile corner was reached, where I found the seventy-seventh milepost in a good state of preservation; an oak post 6 x 6 x 24 inches above ground, properly marked and setting in tolerably firm soil. The 10 miles from the sixty-seventh mile point to the seventy-seventh mile corner are mostly rolling sand hills, in places loose enough to drift.

From the closing corner of the third standard parallel on the sixty-eighth mile to the seventy-seventh mile corner I find that the old line has a westing of 3.23 chains, reducing the total easting from the forty-third mile corner to the seventy-seventh mile corner to 5.05 chains; I find the seventy-seventh mile corner to be 15.39 chains west of the true one hundredth meridian. This westing continues to the Canadian River, but it was on the Washita River that I found the next corners, which were the Hackbusch point 80 miles and 60 chains and eighty-first mile corner. The point 80 miles and 60 chains is witnessed by three bearing trees still standing. In the remaining 9 miles to the Canadian River I found five mile corners, and on the eighty-sixth mile I found the closing corner, the only one I was able to find of the closings by Hackbusch.

The last point found on the meridian reestablished and resurveyed by Hackbusch was the witness corner 9 chains south of the true point for the eighty-ninth mile corner. This point was identified by Hackbusch in 1875 and governed his reestablishment and resurvey; this monument consists of unmistakable evidence of the old pits and mound of earth in firm soil on high bluff south bank of the Canadian River.

I find the witness corner for the eighty-ninth mile corner to be 18.70 chains west of the true one hundredth meridian.

The ninetieth mile corner was the initial point for the Darling resurvey in 1875 of the one hundredth meridian from this point to the south boundary of Kansas.

I was unable to find the ninetieth mile corner, but Mr. Darling states that he found this point by running from the witness corner for the eighty-ninth mile corner. At the present time the point for the ninetieth mile corner is subject to overflow from the Canadian River, and, although the point comes in a grove of elm and cottonwood timber, the place has been burned over and overflowed until the ninetieth mile corner has become obliterated.

Darling's eighth mile corner was the first point on his resurvey that I was able to find. Most of the country for 8 miles north from the Canadian River is made of rolling and drifting sand hills. North from the eighth-mile corner to Darling's forty-fourth-mile corner I found every corner excepting five. Three of these points which I was unable to find came in very sandy soil, and one came in a dry drain, where it might have been washed away during a freshet. I also found 22 of the closing corners on the section lines and the closing corner of the south boundary of the Cherokee country.

About a third of the Darling corners were found lying loose on the ground, but the mile corners and closing corners agree in showing the old line to have a gradual easting from the witness corner for the eighty-ninth-mile corner, south bank of the Canadian, to Darling's thirty-fourth-mile corner, the thirty-fourth-mile corner being the nearest point on the old line to the true one hundredth meridian. I find the thirty-fourth-mile corner to be 8.55 chains west of the true one hundredth meridian.

North from the thirty-fourth-mile corner the old line again shows a gradual westing.

On the forty-third mile I passed the east end of the Cimarron base line, and as the point of intersection of the Cimarron base line with Darling's one hundredth meridian had never before been determined and marked, I established the said point of intersection and marked the point for immediate future reference by setting a stake without marks, witnessed by a concentric circular pit 6 feet in diameter and a mound of earth carefully sodded.

The point of intersection of the Cimarron base line and Darling's one hundredth meridian I find to be N. 0° 41′ W., 52.79 chains distant from Darling's forty-second-mile corner on the true line between the forty-second and the forty-third mile corners, and 15.32 chains east of the east end of the Cimarron base line.

I also find said point of intersection of the Cimarron base line with Darling's one hundredth meridian to be 11.26 chains west of the true one hundredth meridian and 3.69 chains south of the true parallel 36° 30′ 0″ north latitude.

Darling in 1875 failed to find any of the monuments on the one hundredth meridian established by Clark in 1860, and I was equally unsuccessful in 1903 in finding any of Clark's monuments.

Clark does not give the measurements along his survey from one monument to the next, but his plat No. 12 (S. Ex. Doc. No. 70) shows the topography on the one hundredth meridian and the relative position of his monuments, but there is nothing whatever to tie to in undertaking to locate his monuments on the ground.

Clark's first monument on the one hundredth meridian south of the parallel 36° 30′ he states to be on "Pond Creek." His plat shows this about 6½ miles south of the corner monument. Pond Creek is evidently the same creek that is called Ivanhoe Creek to-day, the main branch being about 7 miles south of the intersection of the one hundredth meridian with the Cimarron base line. Water is so very scarce on the one hundredth meridian that it is no wonder that every evidence of an earth mound would be tramped out by cattle or buffalo in the immediate vicinity of watering places, and the soil along Ivanhoe Creek is not very firm.

Clark states that his second monument was established very near the north bank of Middle River in sandy soil. Middle River agrees in position with the stream known as Wolf Creek to-day, a fine stream of running water but so sandy north of Wolf Creek that a mound would scarcely remain a season. I found no corner at all north of Wolf Creek until the end of the third mile, but found every corner for two miles south of Wolf Creek.

Clark's third monument was made of stone and was established a short distance north of Commission Creek. This is the same creek as the Commission Creek of to-day, but the prairie here is very broken and a search for this corner especially difficult without the aid of any definite point to run from. I believe that this is the only Clark monument on the one hundredth meridian that could be in existence to-day, but I was unable to find it.

APPROVAL BY CONGRESS—STATUS.

It does not appear from the records that Congress has ever considered the approval or rejection of the survey of the one hundredth meridian. It does appear conclusive, however, that the Clark survey of the one hundredth meridian was executed with the distinct prospect in view of adopting it as a recognized marked line bounding the State of Texas and the Indian Territory. The fact that Messrs. Jones and Brown surveyed 109 miles of the one hundredth meridian adds inestimably to the value of the line. Clark was instructed by the Secretary of the Interior to adopt the Jones and Brown survey, and he did adopt it and extended it by projection to the parallel 36° 30′ north latitude. The survey by Jones and Brown is well marked as compared to the exclusive Clark surveys; and, while the errors in longitude on the one hundredth meridian by Jones and Brown range from 8 chains to 56 chains, the errors by Clark on the one hundred and third meridian range from 165 chains to 307 chains, and the act of March 3, 1891 (26 Stat., 971), includes the approval of the one hundred and third meridian and does not mention the one hundredth meridian.

Since the execution of the surveys closing upon the one hundredth meridian the United States has patented and disposed of public lands on the east, and these titles, therefore, depend upon the existing unapproved boundary line.

The State of Texas has apparently closed its surveys upon the same line from the Red River north to the closing corner south boundary of the Cherokee country, from which point their closing line evidently runs to the east end of the Cimarron base line, and it would therefore appear that Texas has constructively approved the survey of the one hundredth meridian by Jones and Brown and Clark.

THE N. E. CORNER OF TEXAS.

(See S. Ex. Doc. No. 70, 47th Cong., 1st sess.)

The Clark corner.—Under his appointment as United States commissioner for the survey of the Texas boundary line John H. Clark, in 1860, established the point of intersection of the one hundredth meridian, as projected by himself, with the parallel of 36° 30′ north latitude, as determined by latitude observations by himself at a point about 3 miles northeast of the point to be determined. At the point fixed for the corner Clark erected an earth monument, described by himself as follows:

> The northeast corner monument at the intersection of the parallel 36° 30′ and the one-hundredth meridian is a mound of earth and falls in a drain of a ridge, but not in a position that is likely to be washed away. (See Book 1 of Survey of the Cimarron Base Line.)

The Chaney and Smith corner.—Under contract dated August 26, 1881, R. O. Chaney and W. W. Smith, United States surveyors, surveyed in 1881 the Cimarron base line from the one hundred and third meridian along the parallel of 36° 30′ north latitude, both as determined by themselves. At a point 166 miles 50.94 chains east of their initial point they report that they arrived at a point 39.39 chains north of an old mound, which they suppose is Clark's northeast corner of Texas. They return to their line and set a large stone monument for the east end of the Cimarron base line, but they marked it also with letters appropriate to the northeast corner of Texas. Chaney and Smith fail to find Darling's one-hundredth meridian. (See vol. 110, Field Notes, and vol. 17, Plats, Oklahoma.)

The Bennitt survey.—Under contract dated June 13, 1890, Lyman G. Bennitt, deputy surveyor, surveyed the subdivisional lines in T. 1 N., R. 28 E., Cimarron meridian, Oklahoma. This survey was initiated from the Cimarron base line and closes on the east on Darling's one-hundredth meridian. Mr. Bennitt found and identified Darling's forty-third mile corner and the mile corners to the north; he also connected the Chaney and Smith monument at the east end of the Cimarron base line with Darling's forty-third mile corner. From the Chaney and Smith monument the forty-third mile corner bears N. 28° 46′ E., 31.37 chains distant. Mr. Bennitt failed to project the Cimarron base line east to an intersection with Darling's one-hundredth meridian. Certainly said point of intersection is the proper point for the southeast corner of T. 1 N., R. 28 E.

THE STATUS TO-DAY.

There is positively no evidence to my knowledge of Clark's northeast corner of Texas. Darling failed to find it; Chaney and Smith thought that they found it, and yet went so far as to mark their stone monument at the east end of the Cimarron base line for the northeast corner of Texas. I made a vigorous search in the vicinity of where Chaney and Smith supposed that they found Clark's northeast corner of Texas. That point comes on a knoll and not in the drain of a ridge, and the virgin soil is not disturbed except for a fire guard. All of the remainder of Clark's latitude work appears to be good, and yet the point claimed by Chaney and Smith as Clark's northeast corner of Texas is more than a half-mile south of the parallel 36° 30′ north latitude. Certainly there is no evidence to-day that Chaney and Smith found Clark's northeast corner of Texas, neither is there any authorization or approval to my kowledge that makes the Chaney and Smith stone monument at the east end of the Cimarron base line the legal northeast corner of Texas.

Certainly Darling's forty-third mile corner has no significance as the northeast corner of Texas. I think the proper thing for Bennitt to have done was to project the Cimarron base line east to an intersection with Darling's one hundredth meridian and at that point set a closing corner for the Cimarron base line. I established said point of intersection as a purely reference point, and this point conforms with Clark's topographical description in so far as it "comes in the drain of a ridge, but not in a position that is likely to be washed away." This point of intersection is 11.26 chains west of the true one hundredth meridian, and 3.68 chains south of the true parallel 36° 30′ 0″ north latitude, while the Chaney and Smith stone at the east end of the Cimarron base line is 26.58 chains west of the true one hundredth meridian. There is apparently no legal existing monument for the northeast corner of Texas.

THE PARALLEL 36° 30′ NORTH LATITUDE.

The Clark survey.—Under the authorization previously noted John H. Clark surveyed the parallel 36° 30′ 0″ north latitude from the one hundredth meridian to the one hundred and third meridian. This survey Clark executed in 1860, erecting in all 14 monuments on the parallel, exclusive of the monuments at the corners of the Texas panhandle. Twelve of the monuments consisted of mounds of earth and two were built with stone. Clark's notes give a very brief topographical description of the location of these points, but the distances between them are not noted, and the only record exhibiting their relative location is the sketch plats of the survey. Clark's latitude was fixed by astronomical observation at several points on his survey of the parallel.

The Chaney and Smith survey.—Under the authorization previously stated Chaney and Smith surveyed the Cimarron base line east from the one hundred and third meridian along the parallel 36° 30′ north latitude to the one hundredth meridian. This survey was executed in 1881, and their position in latitude was fixed by astronomical observations by themselves with a meridian telescope, with only a

course level and no micrometer. Chancy and Smith failed to find a single one of Clark's corners, except the one as previously considered at the northeast corner of Texas.

THE STATUS TO-DAY.

In the sundry civil act approved March 3, 1891, it is enacted that "the boundary line between said public-land strip and Texas, and between Texas and New Mexico, established under the act of June fifth, eighteen hundred and fifty-eight, is hereby confirmed."

The Clark line is therefore the legal boundary line, and the Cimarron base line is simply the base line for the survey of the public lands in Beaver County, Okla.

I made no retracement of Clark's parallel 36° 30′, but I did retrace a few miles of the Cimarron base line at each end sufficient to ascertain that said line can be conclusively identified to-day. The east end of the Cimarron base line is 3.68 chains south of the true parallel 36° 30′ 0″ and the initial monument of the Cimarron base line is 2.31 chains north of said true parallel.

I am verbally informed by Mr. W. D. Twitchell, State surveyor, Texas, that in his survey about sixteen years ago of the county lines on the north boundary of the Texas panhandle, embracing about two-thirds of the distance from the one hundredth to the one hundred and third meridian, that he started from the stone monument marking the east end of the Cimarron base line and surveyed west on the parallel, and that in the above-mentioned distance his parallel intersected three of the Clark monuments, numbers or descriptions not noted. Mr. Twitchell also states that there exists a considerable hiatus between his line and the Cimarron base line, said hiatus being of varying width.

I find an hiatus of about 5 chains between the west end of the Cimarron base line and a line of marked stones, which I conclude is the north line of Dallam County, Tex.

THE NORTHWEST CORNER OF THE TEXAS PANHANDLE.

The Clark corner.—Under the authorization previously noted John H. Clark, in 1859, established the northwest corner of the Texas panhandle at the intersection of the one hundred and third meridian and the parallel 36° 30′ north latitude. The position in longitude was fixed by transfer from a point on the thirty-seventh parallel whose position in longitude he assumed as correct. The position in latitude was fixed by observations with a zenith telescope at a point several miles northwest from the point under determination. Clark's description of his corner monument is as follows: "It is an earthen mound, larger than most of the others. There is in sight of it, besides No. 25 (on the one hundred and third meridian), No. 1 on the parallel."

The Major survey.—In 1874 John J. Major, in running south on his survey of the west boundary of the public-land strip, having arrived in the vicinity of Clark's northwest corner of Texas, made a close search for Clark's corner. Failing to find it, Major then set his terminal monument, described as follows: "Made excavation, depos-

ited bones and glass, erected a pine 7 feet by 7 inches, marked 'Texas, N. M., 103° W. L.'"

The Chaney and Smith survey.—In 1881, under authorization previously described, Chaney and Smith observed for longitude at Las Animas, Colo., from which they fixed the one hundred and third meridian at that point, and ran south on their one hundred and third meridian. When in the vicinity of the parallel 36° 30′ they observed for latitude, and with data thus obtained fixed the intersection of the one hundred and third meridian and the parallel 36° 30′ north latitude. Their latitude work has been previously described; their longitude determination was based on telegraphic exchange of time signals on three nights, eye and ear method, personal equation not considered. The longitude fixation on the parallel 36° 30′ also depends upon the projection from Las Animas, Colo., a distance of about 100 miles. Chaney and Smith set a large stone monument to mark the astronomical point that they fixed; they also made a search, but failed to find either the Clark or the Major monument. (See vol. 94, Field Notes, and vol. 17, Plats, N. Mex.)

The Cauldwell survey.—Under contract dated March 1, 1880, Andrew B. Cauldwell, deputy surveyor, surveyed the subdivisional lines of Tps. 25 and 26 N., R. 36 E., New Mexico meridian. It has since developed that the corner now locally known as the northwest corner of Texas is near the center of the SE. ¼ of sec. 12, T. 26 N., R. 36 E., yet Cauldwell failed to find said corner now known as the northwest corner of Texas. (See vol. 147, Field Notes and Loose Plats, N. Mex.)

The Preston reestablishment.—Under contract dated October 25, 1899, Levi S. Preston, deputy surveyor, surveyed the subdivisional lines of T. 26 N., R. 37 E., New Mexico. In order to properly execute said survey, it was necessary to recover and reestablish Clark's northwest corner and that portion of Clark's parallel 36° 30′ north latitude lying west of the Cimarron meridian. This reestablishment by Preston is in accordance with the survey of the north and west lines of Dallam County, Tex., by Texas surveyors. Preston started from well identified monuments erected by Clark where the one hundred and third meridian crosses the Canadian River. Thence Preston retraced the west line of Oldham, Hartley, and Dallam counties, Tex., and found that said survey by the Texas surveyors was on a bearing N. 0° 8′ W. and N. 0° 8′ 30″ W. from the Canadian monument and one intermediate monument, a distance of about 76¼ miles, arriving at the northwest corner of Dallam County, Tex., where Preston excavated and found the remains of an old post greatly decayed. Preston failed to find Major's monument, but he determined that the northwest corner of Dallam County, Tex., was within 150 links in position for the proper amount east of the Johnson monument on the thirty-seventh parallel from which Clark was instructed to run east a certain distance to obtain the one hundred and third meridian. Preston found no evidence of the Clark survey of the parallel 36° 30′ other than the resurvey by the Texas surveyors of the north line of Dallam County, Tex. Preston found that running from the stone monument marking the initial point of the Cimarron base and meridian that the northwest corner of Dallam county, Tex., lies west 2 miles 14.65 chains, and 5.47 chains south.

Preston concluded that the northwest corner of Dallam County, Tex., was the proper point for the northwest corner of Texas, and therefore erected a suitable stone monument to perpetuate said point, and then closed his survey of fractional T. 26 N., R. 37 E., New Mexico meridian, on the north line of Dallam County, Tex., as retraced by himself.

THE STATUS TO-DAY.

The act of March 3, 1891, confirms Clark's northwest corner of the Texas panhandle.

Whether or not the Texas surveyors recovered and reestablished Clark's northwest corner of Texas is uncertain and can probably be proven only by their testimony. That they recovered Clark's one hundred and third meridian is almost conclusive; that the north line of Dallam County, Tex., is very near the correct latitude is positive.

I find that Preston's stone monument marking the northwest corner of Texas, set at the northwest corner of Dallam County, Tex., is 165.57 chains, or 2 miles and 5.57 chains, west of the true one hundred and third meridian, and 3.18 chains south of the true parallel 36° 30′ 0″ north latitude.

I also found and identified every corner in this vicinity noted or established by Preston, so far as I retraced his work, and I also found that the initial monument of the Cimarron base and meridian is 9.39 chains east of the true one hundred and third meridian and 2.31′ chains north of the true parallel 36° 30′ north latitude.

THE ONE HUNDRED AND THIRD MERIDIAN.

The Clark survey.—Under the authorization previously noted, John H. Clark surveyed a portion of the one hundred and third meridian, as follows:

The longitude of the one hundred and third meridian at its intersection with the thirty-second parallel was determined in 1859 by transfer from the station Frontera, on the Rio Grande.

Clark's report, p. 298, states that he ran north on the one hundred and third meridian from the thirty-second parallel to the thirty-third parallel. In this distance Clark erected 3 earth mounds north of the southeast corner of New Mexico. The one farthest north was erected in latitude 32° 33′, as shown on plat No. 5, a difference in latitude from the thirty-second parallel corresponding to about 38 miles. Clark then abandoned the projection of the one hundred and third meridian from the south.

The same year Clark again picked up the one hundred and third meridian at its intersection with the parallel 36° 30′, determination previously described, and from that point projected the one hundred and third meridian south, and, according to his statement on page 299 of the report, he projected it to the thirty-fourth parallel. In this distance Clark erected 22 monuments, the one farthest south being erected in latitude 34° 14′, as shown on his plat No. 6. The distance of this monument from the parallel 36° 30′ is about 156 miles. Of the above 22 monuments only 3 were built with stone, viz: Nos. 9, 16, and 18, the remainder being mounds of earth.

The theoretical distance from the thirty-second parallel to the parallel 36° 30′ is about 310 miles, and Clark's report states that his projection covered the entire distance, excepting from the thirty-third to the thirty-fourth parallels, a distance of about 69 miles. His plats, however, show that the line was never marked from latitude 32° 33′ to latitude 34° 14′, a distance of about 116 miles. (See vols. 10 and 51, Field Notes, and vol. 17, Plats, N. Mex.)

Closing on one hundred and third meridian.—Under contract dated February 27, 1883, Taylor and Fuss, deputy surveyors, surveyed the subdivisional lines in Tps. 13 and 14 N., R. 37 E., New Mexico. Taylor and Fuss identified Clark's monuments Nos. 15 and 16 on the Canadian River, and closed their survey on the projection of the line defined by these two monuments.

I have already referred to the survey by Cauldwell of Tps. 25 and 26 N., R. 36 E., New Mexico, and I will now add that Cauldwell also failed to find any of the Clark monuments south of where he should have found Clark's northwest corner.

I have also referred to the identification by Preston, in 1900, of Clark's monuments Nos. 15 and 16, which substantiates the identification by Taylor and Fuss of the same monuments, and also corroborates the topography in this vicinity, as shown by Clark and Taylor and Fuss. Preston reestablished monuments Nos. 15 and 16 with stones suitably marked.

The Texas retracement.—The statement of W. S. Mabry, Texas surveyor, to the Hon. W. C. Walsh, commissioner general land office, Austin, Tex., in his report of surveys on the one hundred and third meridian, shows that he found and identified twelve of the Clark monuments, viz: Nos. 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, and 21. Mr. Mabry makes the following statement: "The one on the edge of the plain is of stone (No. 9); all the others described consist simply of a large circular trench, and, though they were made in 1858, are yet plain and easily identified." The above report is not dated, but the retracement was executed just prior to 1885.

The report of W. D. Twitchell, State surveyor, Texas, to the State of Texas, states that in 1892 Mr. Twitchell found Clark's monument No. 1 on the one hundred and third meridian. Mr. Twitchell does not describe this monument.

The 1903 retracement.—Mr. Twitchell was associated with Mr. Mabry in the latter's retracement of the one hundred and third meridian south from the parallel 36° 30′, and is therefore acquainted with the monuments identified by Mr. Mabry. In December, 1903, accompanied by Mr. Twitchell, I visited the following points identified by Messrs. Mabry and Twitchell as Clark's monuments: Nos. 1, 5, 6, 9, 10, 11, and 12. The following notes describe my observations at those points:

No. 1.—This monument is located 1 mile 32.7 chains north of the reestablished southeast corner of New Mexico and is the only monument ever found on the meridian run north from the southeast corner of New Mexico. There is now no evidence of Clark's monument at this point, but the topographical surroundings are so nearly in exact accordance with Clark's plat No. 4 that I conclude that Mr. Twitchell reestablished this point in its location by Clark. The present monument consists of a white gypsum stone 10 by 10 by 8 inches,

lying loose on the ground, marked "Mon. No. 1 N." on south face, and "103 M" on north face. This monument stands 3 miles 67.27 chains west of the true one hundred and third meridian.

No. 5.—Located about 3½ miles south of where the Pecos Valley and Northeastern Railway crosses the one hundred and third meridian. This monument is fenced in and protected from cattle; it is on a slight roll or swell of the prairie, agreeing with Clark's description. There is unmistakable evidence of an old circular mound 13½ feet in diameter and a circular pit 20 feet in diameter in tolerably firm soil. Clark's plat No. 6 shows this monument in latitude 34° 20′. The meridian fence at this point bears N. 0° 3′ W. and S. 0° 3′ E. as determined by the solar. Monument No. 5 is the farthest one south of any monument ever found on the meridian run south from the northwest corner of Texas.

No. 6.—About 2 miles north of the same railroad; protected the same as No. 5, and stands on a flat prairie, agreeing with Clark's description. There is unmistakable evidence of the old mound, but the pit is not so well defined. The meridian fence deflects here and bears N. 0° 6′ W. and S. 0° 3′ E., as determined by the solar. Latitude by the solar at noon December 18, 34° 25′.

No. 9.—On the edge of the cap rock on the breaks in the plain; a pyramid of limestone partially torn down, pyramid 8 feet on a side, points N., S., E., and W., now stands about 2 feet high, except in the center, where all of the stones have been removed. The meridian fence can be seen a great distance from here, bearing by the solar N. 0° 1′ E. and S. 0° 1′ W. The breaks in the plain at this point are perfectly delineated in Clark's plat No. 7, and to my knowledge this is the best identified point established by Clark on the one hundred and third meridian.

No. 10.—Protected by fence, a mound 16 feet in diameter and pit 20 feet in diameter fairly well defined; stands 1.68 chains south of No. 11.

No. 11.—Protected by fence, stands just north of an old dim trail, said to be the Fort Smith and Albuquerque trail; soil fairly firm here. Evidence of this mound is still visible, but the pit is entirely obliterated. Bearing of meridian fence by solar N. 0° 2′ E. and S. 0° 2′ W.

No. 12.—About three-fourths of a mile north of No. 11, latitude about 35° 8′. This monument is not fenced, but a mound about 14 feet in diameter and a pit about 20 feet in diameter, both poorly defined, bear evidence to an earlier monument at this point.

Mr. Twitchell and I drove as far north as the Truxillo, but failed to find Clark's monument No. 13. Monument No. 8 has never been found, and in view of the evidence of Mr. Preston relative to monuments Nos. 15 and 16, I did not visit those monuments.

THE STATUS TO-DAY.

The act of March 3, 1891, confirms the survey of the one hundred and third meridian by John H. Clark. Clark left an hiatus of 69 miles unprojected and an hiatus of 116 miles unmarked, and there exists to-day an hiatus from monument No. 1 to monument No. 5 unidentified, a distance of about 159 miles. All evidence is to the effect that monuments Nos. 1, 5, 6, 9, 10, 11, 12, 15, and 16 are identi-

fiable to-day, either by evidence on the ground or by parol testimony or both. Texas has closed the surveys of that State on all of said monuments, and the United States has closed surveys on monuments Nos. 15 and 16. Yet the fact remains that the north end of this line is in longitude 103° 2′ 13.80″, and the south end is in longitude 103° 3′ 55.52″, and the projection of meridians through the north and south extremities can not meet by about 1 mile 46 chains to 1 mile 52 chains, depending upon what latitude the distance between the two projections would be measured.

In the event of either the resurvey or the reestablishment of the one hundred and third meridian from the thirty-second parallel to monument No. 1, and from monument No. 5 to the parallel 36° 30′, it appears to me that the correct boundary line along the 159 miles from monument No. 1 to monument No. 5, which remains unidentified and unidentifiable, is on the true one hundred and third meridian as it shall hereafter be surveyed and confirmed

THE SOUTHEAST CORNER OF NEW MEXICO.

The Clark survey.—Under authorization previously noted, John H. Clark, in 1859, erected a monument at the intersection of the thirty-second parallel and the one hundred and third meridian. The description of this monument is given on page 302 of his report as follows: "This is a mound of very sandy soil; it has a bottle buried in it which contains the latitude and longitude of the point, a list of the names of the members of the commission, and the date of its erection." Longitude determined by transfer from the station Frontera on the Rio Grande, and latitude determined by observations with the zenith telescope at a point about 3 miles southeast.

The Texas reestablishment.—The report of W. D. Twitchell, State surveyor, Texas, to the State of Texas, states that in 1892 Mr. Twitchell found Clark's monuments No. 31 on the thirty-second parallel and No. 1 on the one hundred and third meridian. Mr. Twitchell does not describe in what condition he found the monument at the corner or how he identified it, but said report states "said point of intersection is marked by a monument 5 varas in diameter, with charred wood buried 2 feet east of center." My verbal understanding is that Mr. Twitchell reestablished this point by running east from No. 31 on the parallel and south from No. 1 on the meridian.

The 1903 retracement.—After establishing the true astronomical point 103° west longitude 32° north latitude in December, 1903, I ran a line to the present marked point for the southeast corner of New Mexico. Mr. Twitchell accompanied me. We found some evidence of his charcoal and a couple of broken pieces of a post or railroad tie, but another Texas surveyor had set an iron pipe for the corner, and I made the measurements to the pipe.

This point is in very loose sandy soil and no evidence exists to-day of Clark's corner. The iron pipe is located in longitude 103° 3′ 55.″52, or a measured distance of 20,285.3 feet west of the true one hundred and third meridian; distance equals 3 miles 67.35 chains. The latitude of the iron pipe is 31° 59′ 58.″02, or a measured distance of 3.03 chains south of the true thirty-second parallel.

THE STATUS.

The act of March 3, 1891, confirms Clark's point of intersection of the one hundred and third meridian and the thirty-second parallel.

The evidence furnished by Mr. Twitchell is to the effect that he identified monument No. 31 on the parallel and monument No. 1 on the meridian, as witness monuments to the corner. My own knowledge is to the effect that the iron pipe marked for the southeast corner of New Mexico is in the approximate location of Clark's corner, as witnessed by the White Sand Hills where Clark observed for latitude. However, the topographical identification of monument No. 31 on the parallel and monument No. 1 on the meridian is much better, and this fact and the fair correctness of its latitude bear evidence to the effect that the iron pipe is an authentic resetablishment of Clark's corner.

The latitude of the iron pipe is fairly close; the longitude is perhaps the most incorrect of any land line in the United States.

THE THIRTY-SECOND PARALLEL.

The Clark survey.—Under the authority of his appointment in pursuance of the act of June 5, 1858, John H. Clark, in 1859, initiated his survey of the thirty-second parallel at its intersection with the Rio Grande and surveyed east a distance of 211 miles to his one hundred and third meridian, erecting 31 monuments before reaching said meridian. Most of these monuments were built of stone or contained some stone.

The Easley and Sanders closings.—Under contract dated February 21, 1881, Messrs. Easley and Sanders, deputy surveyors, the same year surveyed the subdivisional lines of T. 26 S., R. 3 E., New Mexico meridian. Messrs. Easley and Sanders found and identified Clark's monument No. 4 on the first spur of the Franklin Mountains. This is a monument of stones 8 feet high, according to the report of Easley and Sanders. They ran a line from there west to the Rio Grande, a distance of 4 miles 8.40 chains, upon which line they closed the surveys in T. 26 S., R. 3 E.; they failed to find the first three Clark monuments. (See vol. 45 and 58, Field Notes, and vol. 34, 35, and 38, Plats, New Mexico.)

The Warner and Armstrong reestablishment.—Under contract dated July 13, 1883,, Messrs. Warner and Armstrong, deputy surveyors, in the execution of their contract No. 193, New Mexico, found and identified Clark's monument No. 25 on the bluff near the west bank of the Pecos, described by Warner and Armstrong as follows: A stone marked "T" on south and "N M 1859" on north, set in a large mound of earth and stone. Running west from monument No. 25 they found monument No. 22 on the east side of Delaware Creek, which monument they describe as follows: A large stone marked "T" on south and "N M 1859" on north face, set in a mound of earth and stone. From monument No. 25 they found that No. 22 bears N 89° 56′ W., 6 miles 61.50 chains distant. Running east from No. 25 they found monument No. 26, which they describe as follows: A pine post 18 inches in diameter, marked "T" on south and "N M 1859" on north, set in a mound of earth. From monument No. 25

they found that No. 26 bears S. 89° 56′ E., 8 miles 50 chains distant. The survey of Warner and Armstrong required the closing of subdivisional surveys on 72 miles of the thirty-second parallel, but, being able to find only three of the Clark monuments, they projected the parallel as defined by monuments Nos. 22, 25, and 26, and reestablished it west a distance of 51 miles from monument No. 25 and east a distance of 21 miles from monument No. 25, setting stones suitably marked at intervals of 1 mile in both directions from monument No. 25. (Same references and contract as above.)

The Warner and Armstrong closings.—Having reestablished the thirty-second parallel as far as was necessary, Messrs. Warner and Armstrong the same year surveyed the subdivisional lines of Tps. 26 S., Rs. 21 to 32 E., inclusive, New Mexico meridian, and closed their survey on the thirty-second parallel, as identified and reestablished by themselves, setting a stone, suitably marked, and witnessed either by pits or a mound of stone, for the closing corners on the thirty-second parallel.

The Texas retracement.—My verbal understanding with Mr. W. D. Twitchell, state surveyor, Texas, is that Mr. Twitchell in the execution of surveys in Texas, retraced the thirty-second parallel by running west from monument No. 31, and that he found no monuments until he reached monument No. 26, which he intersected.

The 1903 retracement.—After establishing a point on the true thirty-second parallel near its intersection with the Rio Grande, in November, 1903, I ran a line east and found Clark monument No. 4 on the summit of the first high ridge of the Franklin Mountains. This monument is 57 links north of the true thirty-second parallel, its latitude being therefore 32° 0′ 0.37″. This monument consists of a pyramid of stone, base 6 by 6 feet, height 4 feet, mound partially down. There are no marks or inscriptions to be found, but the monument in every other way answers the description of Clark's fourth monument on the thirty-second parallel. This fact, together with the correctness of its latitude, make it practically conclusive that this is a Clark monument. I failed to find monuments Nos. 1, 2, or 3 on the thirty-second parallel.

After running the line to the iron pipe marking the southeast corner of New Mexico I continued west to the reestablished monument No. 31, by Mr. Twitchell. This monument is 1 mile 54.78 chains west of the monument at the corner and stands 3.11 chains south of the true thirty-second parallel. This monument now consists of a galvanized-iron pipe 1¼ inches in diameter, 12 inches above ground, there being no evidence of the original circular pit or mound of earth. However, its topographical position is in perfect symmetry with the topographical delineation on Clark's plat No. 4, and this fact with the fair correctness of its latitude bears evidence to the effect that this is an authentic reestablishment of Clark's monument No. 31.

THE STATUS.

The act of March 3, 1891, confirms the boundary line on the thirty-second parallel as surveyed by Clark.

Since that survey there have been found Clark's monuments Nos. 4, 22, 25, 26, and 31, and the United States has closed its public-land

surveys on said parallel in one township on the Rio Grande and in twelve townships near the Pecos. In the above retracements and closings Clark's monuments Nos. 1, 2, 3, 20, 21, 23, 24, 27, 28, 29, and 30 should have been found if not obliterated. As to monuments Nos. 5 to 19, inclusive, there is no information to the effect that they are or are not in existence.

The latitude on the Rio Grande checks especially close, while the latitude at the present marked point for the southeast corner of New Mexico is fairly good.

THE RIO GRANDE.

The boundary line between the State of Texas and the Territory of New Mexico, from the thirty-second parallel south to the international boundary line, is defined in the act of Congress approved September 9, 1850 (Vo. IX, Stats., p. 446), as the channel of the Rio Bravo del Norte.

My observation and brief investigations is to the effect that said stream has many channels. During the dry season, as in November, 1903, there is almost no flowing water; during freshet the stream is often several miles wide, and in resuming a normal flow often settles into a channel a considerable distance from its last previous channel. The land along the Rio Grande is valuable for agricultural purposes, and the boundary line between Texas and New Mexico should be definitely marked.

Messrs. Easley and Sanders in their survey of T. 26 S., R. 3 E., New Mexico, set a post for the intersection of the thirty-second parallel and the east boundary of the Refugio grant at a point 4 miles 8.40 chains west of Clark's monument No. 4. My measurement from Clark's monument No. 4 west to the dry bed of the Rio Grande, said to be the bed of the stream in 1858 and recognized locally as the boundary line between Texas and New Mexico, per testimony of C. N. Story, justice of the peace, La Tuna, N. Mex., was 3 miles 70.71 chains, and the present bed of the Rio Grande is about 2 miles farther west.

I am unprepared to state what is the legal boundary line between Texas and New Mexico from the thirty-second parallel south to the international boundary.

From a careful consideration of the history of the surveys made and the action of Congress and the public Land Department thereon, it appears that Congress has confirmed the John H. Clark survey, made in 1859–60, locating the northeast corner of the Panhandle of Texas, the northwestern corner of the State, and the northwesterly boundary so far as surveyed; that the true eastern boundary, being the point of intersection of the one hundredth meridian with the Red River, has been fixed and determined by Mr. Arthur D. Kidder, under the act of Congress approved January 15, 1901. It also satisfactorily appears that many of the monuments located by John H. Clark in 1859 and 1860 have been obliterated or destroyed and much of the line is impossible of identification.

That controversies now exist over the true location of the boundaries between Texas and Oklahoma, and between Texas and New Mexico, and especially over the unsurveyed portion of the western boundary.

The pending bill, H. R. 443, provides for the appointment of a commissioner who shall be appointed by the President, who, in conjunction with the commissioner to be appointed by Texas for the same purpose, shall run and mark the boundary between the Territories of Oklahoma and New Mexico and the State of Texas, beginning at the point where the one hundredth degree of longitude west from Greenwich crosses the Red River, and running thence north to the point where the said one hundredth degree of longitude intersects the parallel of 36° 30′ north latitude, as determined by John H. Clark in 1859; thence west along said parallel, as marked by said Clark, to the point where it intersects the one hundred and third degree of longitude west from Greenwich, as determined by said Clark, and thence south with the said one hundred and third degree of longitude to the thirty-second parallel of north latitude, and thence west with the thirty-second degree of north latitude, as determined by said Clark, to the Rio Grande River.

The second section provides that the monuments established under act of Congress approved January 15, 1901, by Arthur D. Kidder, as the point of intersection of the true one hundredth meridian with Red River shall be accepted as correct and shall be the beginning point of said survey on said river, and such other landmarks and corners shall be established as may be agreed upon by the commissioners.

That that part of the line on the thirty-second degree of north latitude and on the one hundred and third degree of longitude and the northern boundary of the Panhandle, so far as the same and each of them were surveyed by Clark in 1859–60 and can now be identified, shall be adopted as the true boundary line, and that when any portion of the line can not be identified it shall be determined by running a straight line from the opposite monuments that are identified, and when such straight lines are so run and marked they shall form the true boundary.

An act similar to the pending bill was passed by the legislature of Texas in 1903, authorizing the governor of Texas to appoint a commissioner to act in conjunction with a commissioner to be appointed by the United States. The Texas act recognizes the eastern boundary monument as fixed and determined by Mr. Arthur D. Kidder in 1902, and also recognizes and adopts the Clark survey made in 1859, as constituting the true boundary lines of the State as far as established by him. Suitable provisions should undoubtedly be made for the present determination of the boundary lines in controversy, and inasmuch as the Clark survey so far as it located the western boundary and established the northwest and northeast corners of the Panhandle and located the northern boundary thereof has been approved and confirmed by Congress, such boundary lines should obtain and govern so far as they can be ascertained and identified. The eastern boundary of the Panhandle should be determined from the monument set by Kidder as constituting the true point of intersection of the one hundredth meridian with the Red River, and running thence to the point located by John H. Clark in 1859 as the northeast corner of the Panhandle.

It should be stated that the location of the one hundred and third degree of longitude as determined by Clark may not be the true meridian astronomically located, but, as before stated, so far as it was located

and surveyed by him it has been approved by the United States and accepted by the State of Texas; hence, in the judgment of your committee, so far as the Clark survey along that meridian as located by him can be reestablished it must constitute the boundary line.

In view of the controversy existing as to the location of that meridian and the unsurveyed portion thereof, the committee are of opinion that the proposition of the State of Texas to fix that portion by connecting the two points of the Clark survey by a straight line ought to be acted upon, and have accordingly recommended the bill without amendment in that respect.

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